FINDINGS AND RECOMMENDATIONS

for the

ISSUANCE OF AN ENDANGERED SPECIES ACT SECTION 10(A)(1)(B) INCIDENTAL TAKE PERMIT

for the

R-PROJECT TRANSMISSION LINE HABITAT CONSERVATION PLAN

U.S. FISH AND WILDLIFE SERVICE

MOUNTAIN-PRAIRIE REGION

ECOLOGICAL SERVICES

Denver, Colorado

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INTRODUCTION

Authorities

We, the U.S. Fish and Wildlife Service (Service), received an application for an incidental take permit (permit) for the federally endangered American burying beetle (*Nicrophorus americanus*) (beetle), which is listed as endangered under the Endangered Species Act (ESA). The permit would authorize take associated with the Nebraska Public Power District's (NPPD) proposed R-Project transmission line (R-Project) in Nebraska for 50 years. We reviewed NPPD's application for a permit under section 10(a)(1)(B) of the ESA (16 USC 1531 *et seq.*) and its implementing regulations for incidental take permits (50 CFR 17.22). NPPD's application included a required habitat conservation plan (HCP) and associated documents.

We also conducted an intra-Service consultation under section 7(a)(2) of the ESA, analyzing effects to listed species from the implementation of the approved HCP and issuance of an incidental take permit for the R-Project. We complied with the National Environmental Policy Act (NEPA) (42 USC 4321 *et seq.*) and its implementing regulations (40 CFR 1506.6; 43 CFR 46) for the proposed federal action of issuing an incidental take permit by preparing draft and final environmental impact statements (EIS) for public review and providing other opportunities for public input. We also analyzed and found our action to be in compliance with the Migratory Birds Treaty Act (16 USC 703-712), Bald and Golden Eagle Protection Act (16 USC 668), and National Historic Preservation Act (54 USC 470).

This set of findings addresses whether NPPD's application, including the required habitat conservation plan (HCP), meets the permit issuance criteria under section 10(a)(1)(B) of the ESA for take of the beetle. Throughout the HCP development process, NPPD and the Service examined potential impacts to all federally listed species in the project area. The standard for determining whether activities are likely to result in incidental take is whether take is "reasonably certain" to occur in considering both the direct and indirect impacts of the activities. In particular, NPPD and the Service conducted and reviewed extensive assessments of potential effects of the R-Project on the whooping crane (*Grus americana*). NPPD concluded in its HCP that the likelihood of whooping crane collisions with the R-Project is extremely low and did not seek take coverage for the whooping crane. The Service concluded that there is no scientifically reliable evidence that take of whooping cranes from collision with the R-Project is reasonably certain to occur. Our analysis for all other federally listed species, including whooping crane, concluded that take from R-Project activities was not reasonably certain to occur and would therefore not be covered by the permit. The June 4, 2019 memorandum transmitting the Service's Biological Opinion under section 7(a)(2) of the ESA details our determinations that issuance of the permit is not likely to adversely affect the federally listed endangered interior least tern (*Sterna antillarum*), whooping crane, and blowout penstemon (*Penstemon haydenii*), or the federally listed threatened piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), northern long-eared bat (*Myotis septentrionalis*), and western prairie fringed

orchid (*Platanthera praeclara*). We also determined that the project will have no effect on the federally listed endangered Topeka shiner (*Notropis topeka*). The memorandum provides the rationale supporting these determinations and is herein incorporated by reference.

Project Description

NPPD is proposing to construct, operate, and maintain a new 345-kilovolt transmission line, approximately 225 miles long, located primarily in the Sandhills of Nebraska. NPPD's stated purpose for this project is to 1) improve power transmission reliability, 2) reduce generation congestion, and 3) support future renewable energy development. The 100-mile north-south segment would begin at the Gerald Gentleman Station Substation located south of Sutherland, Nebraska, and would extend north of Sutherland then east to U.S. Highway 83. The R-Project would then travel north following U.S. Highway 83 to connect to NPPD's existing substation east of Thedford, Nebraska, which would be expanded. The 125-mile east-west segment would begin at the Thedford Substation, then proceed east connecting to a new substation in Holt County, where it would connect to the Western Area Power Administration's Fort Thompson-to-Grand Island transmission line. The width of the right-of-way would be 100 feet each side of the centerline for the entire transmission line, unless otherwise specified.

Tubular steel monopole structures and steel lattice towers would be placed approximately 1,350 feet apart. Steel lattice towers would be used in areas of the Sandhills where existing access routes are limited or do not exist. Lattice towers can be constructed with less overall effect on the surrounding area because smaller equipment and helicopters can be used during construction. Further detailed description of the project and related activities can be found in sections 2.0 - 2.7 of the HCP and section 2.4 of the Final EIS, which are herein incorporated by reference.

Certain activities associated with construction and emergency repairs (considered non-routine operations and maintenance) for the transmission line are likely to incidentally take the beetle. The permit would authorize take resulting from such activities, which are referred to as covered activities. Table 2.1 of the HCP provides details on all R-project activities and indicate which are likely to result in take of the beetle and be covered by the permit. The general types of covered activities are construction or modification of temporary and permanent access routes; right-of-way preparation; installation or modification of temporary work areas, including fly yards, assembly areas, construction yards, staging areas, borrow areas, and batch plants; installation of lattice towers and steel monopoles, including foundations; stringing, pulling, and tensioning; expansion of the Thedford Substation; distribution power line relocation; well relocation; and emergency repairs. Take is not expected from routine operations and maintenance activities.

Permit Area and Duration

The permit area is a subset of the entire R-Project area (approximately 162 miles of the 225-mile route) and encompasses only where take of the beetle is anticipated to occur. The permit area

includes 1 mile on each side of the R-Project centerline for 38.4 linear miles from Stapleton, Nebraska, to the Thedford Substation and 4 miles on each side of the centerline from this point to the eastern terminus at the Holt County Substation. The HCP assumes beetle presence throughout all portions of the permit area. A more detailed description and map of the permit area is in section 1.4 of the HCP, which is herein incorporated by reference.

The proposed permit duration is 50 years to provide coverage for take of the beetle that may occur over the estimated 50-year life of the R-Project transmission line. Emergency repairs, which are anticipated to result in take, may be necessary at any point throughout the life of the project. If the transmission line remains in operation at the end of the permit duration, NPPD will coordinate with the Service to renew or amend the permit as needed.

Anticipated Forms of Take of the American Burying Beetle

Incidental take of beetles is anticipated from R-Project activities during construction and emergency repairs and is summarized below. Further details on the types and sources of take are described in section 5.1 of the HCP, section 3.7.11 of the Final EIS, and in the Effects of the Action section of our Biological Opinion, which are herein incorporated by reference.

During construction and emergency repairs, adult beetles, larvae, and eggs may be crushed or subject to desiccation when exposed by soil disturbance. Covered activities occurring at night with the use of artificial lighting may attract beetles, which may result in take by disrupting normal foraging behavior and increasing the risk of predation. Increased human activity, vehicle traffic, and noise associated with covered activities may temporarily prevent beetles from using habitat where these activities occur.

Covered activities associated with construction and emergency repairs would temporarily disturb 1,250 acres and permanently disturb 33 acres of beetle habitat over the life of the permit. All adult beetles, larvae, and eggs present in temporarily and permanently disturbed habitat are likely to be killed by crushing from equipment and desiccation through exposure from disturbed soils. The disturbed habitats would not be available for foraging, breeding, or sheltering by beetles from nearby habitats. NPPD would restore temporarily disturbed habitat to suitable beetle habitat conditions based on methods and success criteria in the R-Project's Restoration Management Plan. NPPD would initiate restoration about 2 years after R-Project construction begins. Success criteria could be met within 1 to 5 years after restoration activities are completed. Beetles are expected to recolonize these areas and resume normal foraging, breeding, and sheltering behavior when habitat restoration success criteria are met, approximately 3 to 7 years after initial project disturbance.

Temporary access routes created for R-Project construction or emergency repairs may result in short-term fragmentation of beetle habitat. Vertebrate scavengers may use these temporary access routes as travel corridors into grassland habitat, thus increasing competition with beetles for carrion which could diminish food availability. After NPPD restores the temporary access

routes to previous conditions, they will no longer provide a travel corridor for vertebrate scavengers into grassland habitats which should reduce food competition back to baseline levels.

Anticipated Level of Take Covered by the Permit

The number of beetles anticipated to be taken by covered activities was calculated based on the number of acres that would be temporarily and permanently disturbed and the estimated density of beetles in those habitats. A full explanation of the methods used and specific calculations can be found in section 5.2 of the HCP, section 3.7.11.2 of the Final EIS, and the *Amount or Extent of Take Anticipated* section of the Biological Opinion, which are herein incorporated by reference.

NPPD was not able to access all potential beetle habitat in the R-Project area to conduct surveys and is, therefore, assuming for the purposes of take calculation that all habitat is suitable, high-quality, and occupied by beetles. Construction activities would cause temporary disturbance of 1,042 acres and permanent loss of 33 acres of beetle habitat. Emergency repairs would cause permanent loss of 208 acres of beetle habitat. Take of beetles was calculated by multiplying beetle density (0.13 beetle per acre based on data collected in the Sandhills between 1996 and 2016) by the total number of acres (1,283) of beetle habitat that would be temporarily and permanently disturbed. Thus, we anticipate that 140 beetles are likely to be taken during construction and 27 beetles during emergency repairs for a total of 167 beetles that would be taken throughout the life of the R-Project. Therefore, the permit would specify the authorized take limit to be:

- No more than 1,283 acres of American burying beetle habitat, of which no more than:
    - 1,042 acres of temporary loss from construction activities,
    - 33 acres of permanent loss from construction activities, and
    - 208 acres of permanent loss from emergency repairs

- No more than 167 American burying beetles, of which no more than:
    - 140 beetles from construction activities, and
    - 27 from emergency repairs.

Conservation Measures

Sections 6.0 – 6.2.2 of HCP provides several measures to avoid, minimize, and mitigate the impacts of anticipated take of the beetle. These measures are addressed in detail below in the section on *HCP Specifies Steps to Minimize and Mitigate Impacts of the Take* of this Findings document.

Monitoring, Adaptive Management, and Reporting

Section 6.3 and appendices E and F of the HCP provide details on the plans for compliance and effectiveness monitoring. Compliance monitoring will entail annual beetle surveys to determine whether the permit's take limit may be exceeded. It includes on-site compliance monitors to ensure that the HCP's avoidance and minimization measures are properly implemented. It also has provisions for reporting any activities found to be out of compliance and rectifying them. NPPD will also conduct effectiveness monitoring to evaluate effectiveness of post-construction habitat restoration and inform the adaptive management program as needed.

Adaptive management addresses uncertainties regarding species biology and the effectiveness of the HCP's conservation strategy for the beetle. The process, including monitoring, allows newly acquired information and experience to inform adjustment of management plans as needed. Sections 6.5.1 and 6.5.2 of the HCP provide the adaptive management frameworks for habitat restoration and the mitigation parcel, respectively.

NPPD will provide an annual report following each late-summer monitoring session, which will include results from the effectiveness monitoring (further detailed in section 6.6 of the HCP). The reports will document progress toward achieving the restoration performance standards. If performance standards are met, the fifth annual report will be the final report on restoration effectiveness. If performance standards are not met within the initial five-year monitoring period, adaptive management measures will be implemented (further detailed in section 6.5.1 of the HCP), and post-construction restoration effectiveness monitoring will be extended until the standards are met. All reports and memos will be submitted to the Service.

PUBLIC INVOLVEMENT

In accordance with NEPA, we announced public scoping to prepare an EIS on October 30, 2014 (79 FR 64619). The Service also held three public scoping meetings in November 2014, in three Nebraska cities. We published a notice of availability of the draft EIS and draft HCP on May 12, 2017 (82 FR 22153) and requested public comments on those draft documents. This notice also announced three public meetings on the draft EIS and draft HCP, which we held in June, 2017, in three Nebraska cities. We reopened the comment period for the draft EIS and draft HCP on September 8, 2017 (82 FR 42561). We published the final EIS, our responses to comments on the draft EIS, draft record of decision, and final HCP and associated documents for public inspection from February 8, 2019 (84 FR 2900) until March 11, 2019.

SECTION 10(a)(2)(A) HABITAT CONSERVATION PLAN REQUIREMENTS – ANALYSIS AND FINDINGS

Section 10(a)(2)(A) of the ESA specifically mandates that no permit may be issued by the Secretary of the Interior, through the Service, authorizing any taking referred to in paragraph (1)(B) unless the applicant submits to the Secretary a conservation plan that specifies: (i) the impact which will likely result from such taking; (ii) the steps the applicant will take to minimize

and mitigate such impacts; (iii) what alternative actions to such taking were considered and the reasons why such alternatives are not being utilized; and (iv) such other measures as the Secretary may require as being necessary or appropriate for the purposes of the HCP. We find the HCP to be complete and in accordance with ESA section 10(a)(2)(A) application requirements as supported below.

HCP Specifies the Impacts from the Taking

Sections 5.1 – 5.2 of the HCP specifies the types of anticipated take, quantifies temporary and permanent habitat disturbance, and calculates the amount of take anticipated for each type of covered activity in both numbers of habitat acres and beetles. Section 5.3 describes the impacts anticipated from the estimated take of beetles. Table 5-1 of the HCP provides figures of disturbed acres for each covered activity.

Estimating population numbers of the beetle is difficult, because numbers fluctuate annually due to precipitation and temperature, carrion availability, and other factors (USFWS 2008). Thus, population estimates should be based on evaluations of trends from surveys conducted over several years (USFWS 2008, p. 14). Amaral (2005, p. 75) estimated a population of 10,000 beetles in the Sandhill Ecoregion based on survey results, while Panella (2013, p. 2) indicated that since 2005 the trend of the ABB population in Nebraska is "fluctuating with drought."

Section 5.3 of the HCP considers two different approaches for estimating beetle population numbers and assessing the impact that will likely result from the anticipated take of beetles. One method relies on the Jorgensen et al. (2014) model that assumes beetles are expected be present where the calculated probability of beetle occurrence is 60 per cent or higher. Based on this probability level, the Jorgensen et al. (2014) model assumes that beetles occur on 5,574,357 acres of habitat in the Sandhills. Applying a median beetle density calculated from historic trapping data (0.01 beetles per acre) to the Sandhills acreage, the HCP estimates the beetle population in the Sandhills to be about 55,743. Thus, the HCP estimates that the total take of 167 beetles over the life of the permit amounts to 0.29 per cent of the Sandhills population. Applying the same approach, the NPPD determined in the HCP that the total take would represent 3.3 per cent of the median beetle population in the permit area.

The second approach in the HCP relies on annual beetle surveys to estimate the beetle population within the permit area to look at potential impacts to that local population from R-Project take. The HCP estimates beetle population size in the permit area to be a low of 9,071 to a high of 16,125 beetles, based on results from mark/recapture data in the permit area for the years 2016 – 2018.

The population viability analysis in Amaral et al. (2005) indicates that a population of 1,000 or more beetles would be viable in the long-term absent severe catastrophic events or reduction in carrying capacity and that a population of 10,000 or more can persist through catastrophic events. Citing the above, NPPD concludes in the HCP that the anticipated level of take from the

R-Project would have little impact on the population of 9,071 to 16,125 beetles in the permit area. Given little or no impact to the viability of the local population in the permit area, the HCP also concludes that the take would not impact the greater Sandhills population.

HCP Specifies Steps to Minimize and Mitigate Impacts of the Take

Section 6.0 – 6.1 of the HCP provides a conservation plan with two overarching biological goals and the objectives to achieve those goals. The HCP's conservation plan further stipulates several measures to avoid, minimize, and mitigate the impacts of the anticipated take of beetles.

Measures to Avoid and Minimize the Impacts of the Take

The avoidance and minimization measures to be implemented by NPPD were designed to meet the objectives for Goal 1 of the HCP's conservation plan (section 6.0 – 6.1 of the HCP), which is to maintain or restore beetle habitat within the permit area to support a sustainable beetle population. The identified objectives to achieve this goal are: 1) during Project construction, ensure permanent disturbance of ABB habitat does not exceed 33 acres and temporary disturbance of beetle habitat does not exceed 1,042 acres from R-Project covered activities, and 2) within 5 years post-construction, establish vegetation on disturbed sites with basal ground cover at least 80 per cent of adjacent reference plots, thus restoring beetle habitat. The avoidance and minimization measures are listed below, and details of each measure are described in section 6.2.1 of the HCP, which is herein incorporated by reference.

- Avoidance of beetle high-density areas.
- Avoidance of sub-irrigated wet meadows and mesic grasslands.
- Use of existing roads and two-tracks for access.
- Use of temporary improvements for access.
- Overland access with low-ground-pressure equipment.
- Siting temporary work areas in areas unsuitable for ABB use.
- Use of helical pier foundations in Sandhills.
- Helicopter construction.
- Winter construction.
- Limited nighttime construction during periods when ABB are active.
- Sodium vapor lighting and downshield lighting.

- Limited mowing and windrow vegetation in specified areas.
- Limited removal of carrion at structure locations along existing roads in specified areas.
- Restoration of beetle habitat.
- Worker Educational Awareness Program.

Measures to Mitigate the Impact of the Take

Goal 2 of the HCP's Conservation Plan in section 6.1 is to protect habitat that supports individuals of the Sandhills beetle population. The objective identified to achieve this goal is to protect, in perpetuity, an amount of occupied beetle habitat based on mitigation ratios described in section 6.2.2 of the HCP. This measure is intended to offset the impacts of take from the R-Project, including temporary and permanent loss and degradation of beetle habitat. The mitigation ratio for the number of acres of habitat conserved to the number of temporarily and permanently impacted acres is 3:1. The calculated total mitigation acres based on this ratio is 473. However, the HCP calls for at least 500 acres of mitigation because that is the standard recommended minimum size for beetle mitigation lands (USFWS 2014). Table 6-2 of the HCP details the number of impacted and mitigation acres for each category and is herein incorporated by reference. NPPD secured an Option to Purchase for approximately 600 acres of mitigation lands in fee title in Blaine County, Nebraska, to be protected in perpetuity by a deed restriction.

Beetle habitat temporarily disturbed in the R-Project permit area will be restored to its previous vegetation condition after construction is complete as described in the R-Project Restoration Management Plan, herein incorporated by reference. The goal of the Restoration Management Plan is to meet the success criteria for restoration of beetle habitat within 5 years post-construction. To ensure restoration is successful, NPPD will establish an escrow account with a banking association to serve as a financial guarantee that money is available to restore temporary disturbance areas if NPPD is unable to take the appropriate steps to do so.

Alternatives to the Take and Reasons Not Used

Section 2.10 of the HCP describes five alternatives to the take anticipated under NPPD's proposed R-Project and HCP.

No-take Alternative

This alternative would be to complete the R-Project in a manner that would completely avoid take of beetles. NPPD determined that this alternative is not feasible to meet the R-Project purpose and need, which are to increase reliability of the electric transmission system, relieve congestion from existing lines, and provide opportunities for renewable energy projects. Due to

the prevalence of beetle habitat in the location where the R-Project is necessary to meet the purpose and need, the R-Project would not be able to avoid take. Section 2.10.1 of the HCP, herein incorporated by reference, provides further details on necessary route location and interconnections.

Alternative Using Only Steel Monopole Structures

Rather than using a mix of steel monopoles and lattice towers as in the proposed alternative, this alternative would use only steel monopoles along the entire R-Project route. Because steel monopoles require concrete foundations, NPPD would need to develop or expand more access roads for heavy equipment to construct foundations. This alternative was not selected because it would result in greater temporary habitat disturbance, greater restoration requirements, and increased construction costs. Furthermore, it would result in greater impacts to beetles and their habitat. Section 2.10.2 of the HCP, herein incorporated by reference, provides further details on this alternative.

Alternative Using Only Lattice Tower Structures

This alternative would involve construction of only lattice towers along the entire R-Project route. Lattice towers result in less ground disturbance to beetle habitat because they can be installed onto helical pier foundations and by helicopter. However, NPPD did not select this alternative because the public objects to the visual impact of lattice towers, the larger base footprints of lattice towers would more greatly impact some agricultural operations, and these structures are more costly. NPPD determined that reduction in effects to beetles from this alternative would be minimal, given that substituting lattice towers for monopoles in the proposed alternative would be for only 35 miles. Section 2.10.23 of the HCP, herein incorporated by reference, provides further details on this alternative.

Alternative for Construction during Winter Only

This alternative would consist of NPPD restricting all construction activities for the lattice towers and monopoles that are in the proposed alternative only during the winter when the beetle is inactive below the frost line from October through April. This alternative would reduce direct take of beetles to a very low level. NPPD did not select this alternative because the lack of schedule flexibility and allowance for contingencies makes it infeasible. Completing the project would take much longer and be more costly because less work could be completed during the shorter daylight hours and lower temperatures of winter. Furthermore, because structure erection, stringing, pulling, and tensioning cannot be completed within the beetle inactive period, this work would need to extend into when beetles become active, thereby negating benefits avoiding direct beetle take in winter. Section 2.10.4 of the HCP, herein incorporated by reference, provides further details on this alternative.

Alternative Using Capture and Relocation Measures

This alternative would include capturing and relocating beetles out of harm's way according to the Service's and Nebraska Game and Parks Commission's (NGPC) joint guidance in *Conservation Measures for the American Burying Beetle (ABB)* (USFWS and NGPC 2008). It would also require "maintaining-clear" efforts by keeping the subject areas mowed to less than 8 inches and removing carrion after beetles have been captured. NPPD determined this alternative as not viable, because 1) clearing all beetles in areas of high beetle density is not likely achievable, 2) "maintaining-clear" efforts would not be feasible due to lack of suitable access and potential wind erosion in remote areas of the Sandhills, 3) it would greatly increase the level of take through capture, 4) it may increase competition among beetles for limited carrion at relocation, and 5) it is likely to result in increased mortality from capture and handling. Section 2.10.5 of the HCP, herein incorporated by reference, provides further details on this.

SECTION 10(a)(1)(B) INCIDENTAL TAKE PERMT ISSUANCE CRITERIA – ANALYSIS AND FINDINGS

Section 10(a)(2)(B) of the ESA requires the following criteria to be met before the Service may issue an incidental take permit. If these criteria are met and there are no disqualifying factors, we must issue the incidental take permit (ESA section 10(a)(2)(B)(v)). The Service's findings and recommendations document must provide the rationale and results of the analyses used to determine if the applicant and HCP meet all permit issuance criteria.

The taking will be incidental

Take of beetles will be incidental to the otherwise lawful activities associated with the construction, operations and maintenance, including emergency repairs, for the R-Project. As described above in *Anticipated Forms of Take of the American Burying Beetle* of this Findings document, all anticipated forms of take are unintentional and not the purpose of the covered activities, which are to construct, operate, and maintain the R-Project transmission line.

The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking

The statutory standard of minimizing and mitigating the impacts of the take "to the maximum extent practicable" under ESA section 10(a)(2)(B)(ii) will always be met if it is demonstrated that the impacts of the taking will be fully offset by implementation of the measures in the HCP (USFWS and NMFS 2016). The Service has determined that the HCP's conservation strategy and NPPD's fulfillment of protection of mitigation habitat will, to the maximum extent practicable, minimize and mitigate the impacts of the anticipated take of beetles from the R-Project. We anticipate that construction of the R-line will result in the temporary loss of 1,042 acres of beetle habitat and permanent loss of 33 acres of beetle habitat from destruction or degradation. Emergency repairs over the life of the permit would result in the temporary loss of

208 acres (Table 1). To keep direct take of beetles as low as possible, NPPD would implement several avoidance and minimization measures, as described above and in detail in sections 6.0 - 6.2.1 of the HCP. Similar to most HCPs, NPPD's mitigation strategy is based on habitat rather than the number of beetles taken. Because NPPD was unable to access private lands and assign habitat quality ratings along the entire route, NPPD conservatively assumed that all disturbed acres are beetle habitat and provide equal high-quality value to beetles. To offset the impacts of the take from loss of permanent habitat, the HCP commits to a 3:1 ratio of conserved acres of high-quality habitat occupied by beetles to impacted acres of habitat.

Table 1. R-Project HCP Mitigation Calculations for Beetle Take

Type of Impact	Impacted Acres	Mitigation Ratio (Conserved: Impacted)	Temporal Impact Timescale Multiplier	Mitigation Acres
Temporary Construction	1,042	3:1	10%	312
Permanent	33	3:1	--	99
Temporary Emergency Repairs	208	3:1	10%	62
Total	1,283	--	--	**473**

Temporarily disturbed beetle habitat will be restored to its previous vegetation condition after construction is complete as described in the R-Project Restoration Management Plan. Beetles would not be able to forage and breed on temporarily disturbed habitat until restoration success criteria are achieved and habitat becomes suitable again. The R-Project estimates that restoration of vegetation cover will occur in the first 5 years of the 50-year life of the project, which is 10 per cent of the life of the project. Corresponding to this timescale, mitigation acres for temporary construction impacts were multiplied by 10 per cent to mitigate for 5 years of beetle habitat loss. Thus, the effective mitigation ratio for temporary impacts is 0.3:1.

The calculations for mitigation acres using these ratios results in 312 acres for temporary impacts from construction, 99 acres for permanent impacts, and 62 acres for temporary impacts from emergency repairs, for a total of 473 acres to fully offset all beetle impacts from the R-Project (Table 1).

The Service recommends that stand-alone mitigation property for the beetle be a minimum of 500 acres of contiguous, suitable beetle habitat (USFWS 2014). The 500-acre minimum for beetle mitigation lands is based on the effective survey area for one beetle trap. The effective survey area is a 0.5 mile radius around each trap, based on reported beetle movement during survey efforts. Surveying beetles on mitigation lands smaller than 500 acres would increase uncertainty about beetle presence on mitigation lands compared to surrounding areas. The 500-

acre minimum for mitigation lands allows more certainty in the use of beetle survey results in decisions related to 1) selecting the most appropriate areas to offset impacts to beetles, and 2) effectiveness of management actions on mitigation areas. The HCP documents NPPD's agreement to the logic behind the 500-acre minimum for mitigation lands and volunteered to commit to obtaining a parcel of that size.

The mitigation calculations for the R-project is consistent with other projects in Nebraska, which is in the northern portion of the beetle range, but varies slightly from the mitigation ratios used in HCPs in Oklahoma, Texas, and Arkansas in the southern portion of the beetle range. Both mitigation strategies use a hierarchical process that increases mitigation correspondingly to the quality of beetle habitat (Table 2) or high-use areas (Table 3) in relation to the duration of impact. The mitigation strategies differ between the northern and southern portions of the beetle range due to differences in 1) beetle habitat use and 2) dominant land cover types.

In the northern portion of the beetle range, research of beetle habitat allowed the categorization of habitat quality as prime, good, fair, marginal, or poor for the beetle (Hoback 2011, USFWS 2013). The Service determined that this habitat quality rating method (Hoback 2011) remains the best available science to evaluate the quality of beetle habitat in Nebraska and used the quality categories as the basis for the determination of mitigation to offset impacts to beetle habitat (Table 2).

Table 2. Mitigation Ratios for American Burying Beetle Impacts in the Northern Portion of the Beetle Range (Ratios are Conserved: Impacted Acres)

	Quality of Beetle Habitat Impacted			
Impact Duration	**Prime Habitat**	**Good Habitat**	**Fair Habitat**	**Marginal Habitat**
Permanent	3:1	2:1	1:1	0.5:1
Temporary	Same as Permanent, but scaled to the duration of impacts over the life of the project			

Table 3. Mitigation Ratios for American Burying Beetle Impacts in the Southern Portion of the Beetle Range (Ratios are Conserved: Impacted Acres)

	Location of Impact		
Impact Duration	**Conservation Priority Area (CPA)**	**Beetle Range outside of CPA**	**Mitigation Land[1]**
Temporary[2]	0.5:1	0.25:1	1.5:1
Permanent Cover Change[3]	1:1	0.5:1	2:1
Permanent[4]	2:1	1:1	3:1

[1]Mitigation Land Ratio = CPA ratio plus replacement of lost mitigation value

[2]Temporary Impacts include any habitat impact less than 5 years in duration

[3]Permenant Cover Change Impacts change the successional stage of an area to a different stage (e.g., forest or shrubland to grassland; grassland to forest)

[4]Permanent Impacts include any habitat impacts more than 5 years in duration

In the southern portion of the beetle range, beetles have been successfully live-captured in several vegetation types, including native grasslands, grazed pasture, riparian zones, coniferous forests, mature forest, oak-hickory forest (USFWS 1991, pp.14-17, 2008, pp.8-11; Creighton et al. 1993, entire; Lomolino et al. 1995, entire; Lomolino & Creighton 1996, entire; Jurzenski 2012, pp.47-72). Rather than delineating habitat suitability across the diverse ecosystems used by the beetle in the southern portion of the range, the Service instead developed mitigation ratios based on location within Conservation Priority Areas (CPAs), outside CPAs, or on beetle mitigation lands (Table 3). The Service delineated CPAs in the southern portion of the range using documented beetle presence within the last 10 years.

Available land cover differs between the northern and southern portions of the range (Leasure and Hoback 2017). In the northern portion of the range, beetles can be found throughout the Nebraska Sandhills Ecoregion in mesic areas such as wet meadows and wetlands, semi-arid sandhills, loam grasslands, and tree-lined shelterbelts. The dominant land cover in beetle habitat in the northern portion of the range is native grassland and almost no forests (Leasure and Hoback 2017). Trees located in narrow riparian areas and planted windrows and shelterbelts generally do not provide large contiguous blocks of forested habitat in the northern portion of their range.

In the southern portion of the range, beetle habitat includes larger amounts of deciduous and evergreen forests (Leasure and Hoback 2017). These forested areas may be fragmented, impacting the beetle even if converted to usable grassland habitat (USFWS 2016). Therefore, the Service's mitigation strategy in the southern part of the range includes a higher mitigation

ratio for impacts causing "permanent cover change," while the northern portion, including the mitigation calculations for the R-project, does not.

To fulfill the R-Project HCP's mitigation commitment to protect at least 500 acres of high-quality beetle habitat, NPPD secured an Option to Purchase approximately 600 acres of mitigation lands in fee title that include portions of Sections 15 and 22 in T24N, R22W in Blaine County, Nebraska. This mitigation parcel is 100 acres greater than the mitigation calculated in the HCP and is a continuous tract of land that has documented beetle presence along the entire tract. NPPD has completed 2 years of beetle surveys along public roads adjacent to these mitigation lands. Beetle densities on portions of the property are within the upper 10 per cent of densities documented in the Service beetle database. NPPD will develop a management plan for the mitigation parcel, in coordination with the Service and NGPC, to maintain habitat in its current grassland land cover for the beetle in perpetuity. The management plan will address land uses, such as grazing, haying, and controlled burning, to maximize beetle density on the parcel. For these reasons and because the number of acres exceeds by 20 per cent the amount calculated based on the Service mitigation strategy for the beetle in the northern range, the Service determines that this mitigation will more than fully offset the impacts of take from the R-Project.

The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided

The Service has determined that adequate funding is ensured for NPPD to fully implement the HCP and procedures are in place to deal with unforeseen circumstances. Section 8.0 of the HCP provides details on the funding mechanisms NPPD will use to ensure adequate funding for costs related to the implementation of the HCP, R-Project Restoration Management Plan, and R-Project Final Migratory Bird Conservation Plan, herein incorporated by reference. NPPD's financial processes are the (1) Southern Power Pool (SPP) load-sharing cost methodology, (2) General Bonds issued for the R-Project, and (3) annual rate-setting budgets of NPPD.

NPPD is a public corporation and political subdivision of the State of Nebraska and is authorized by Nebraska state statutes to engage in the generation and transmission of electrical energy and to sell electrical energy. Pursuant to Nebraska State statute section 70-655, NPPD also has the power and is required to fix, establish, and collect adequate rates, tolls, rents, and other charges for electrical energy, water service, water storage, or for any other commodities sold, furnished, or supplied by NPPD. NPPD will fund implementation of the HCP using its operating budgets and its ability to fix, establish, and collect adequate rates and other charges to operate its business. NPPD has been able to produce revenues each fiscal year sufficient to fund annual operating expenses and debts during the fiscal year, as detailed in section 8.0 of the HCP.

NPPD is a member of the SPP, which issued a Notice to Construct (NTC) for the R-Project. The Federal Energy Regulatory Commission approves the SPP's transmission cost allocation. The R-Project, as an SPP NTC project, is expected to be financed from General Bonds with a

substantial amount of the debt service to be reimbursed by SPP based on SPP's load-sharing cost methodologies. Costs that are not covered by the SPP load-sharing cost methodology and costs for the ongoing mitigation and maintenance for right-of-way areas obtained for the R-Project that are incurred over the life of the permit will be included in the annual rate setting budgets of NPPD.

NPPD intends to issue General Revenue Bonds for the R-project that will cover the costs of construction. The funds from the General Revenue Bonds will also pay for the costs necessary to acquire mitigation acres. Maintenance for the mitigation acres will be covered from collections through rates, with required amounts determined as part of NPPD's annual rate-setting and budgeting process. Additionally, NPPD will establish an escrow account to sufficiently fund procedures necessary to address any issues that may affect successful habitat restoration the HCP required to be achieved within 3 to 5 years after construction of the R-Project.

NPPD would promptly notify the Service of any material change in NPPD's financial ability to fulfill its obligations and commitments required under the implementation of the HCP. In addition to providing any such notice, NPPD offered to provide the Service with a copy of its annual report for each year of the permit or other reasonably available financial information that would provide adequate evidence of NPPD's ability to fulfill its obligations under the implementation of the HCP.

Unforeseen circumstances are changes in circumstances that affect a species or geographic area covered by an HCP, were not or could not be anticipated, and result in a substantial and adverse change in the status of a covered species (50 CFR 17.3). Changed circumstances are changes that affect a species or geographical area covered by an HCP, the applicant and Service can reasonably anticipate, and can be planned for during development of the HCP (50 CFR 17.3). To the extent these changed circumstances are provided for in the HCP's operating program, the permittee is required to implement the appropriate measures identified in the HCP to respond to the changed circumstances. The "No Surprises" rule, codified at 50 CFR 17.22(b)(5), provides assurances to permittees that, as long as a permittee is properly implementing the HCP and the permit, the Service will not require any additional commitment of land, water, or financial compensation for species that are adequately covered, nor will it impose additional restrictions on the use of land, water, or other natural resources beyond those specified in the HCP without the consent of the permittee. The "No Surprises" assurances apply to only species adequately covered in the HCP and when changed or unforeseen circumstances occur.

Section 7.2 of the R-Project HCP identifies several changed circumstances, including but not limited to drought, wildfire, severe storms, and changes in status or distribution of the beetle. The HCP describes provisions to address the identified changed circumstances and also relies on specific measures in the adaptive management framework in section 6.5 of the R-Project Habitat Restoration Plan, which are herein incorporated by reference.

Changes in circumstances not identified as a changed circumstance in Section 7.2 of the HCP and that substantially alter the status of the beetle are considered unforeseen circumstances. In the event that unforeseen circumstances occur, the Service would notify NPPD to coordinate potential procedures to address them. The Service may require additional measures of NPPD where the HCP is being properly implemented only if such measures are limited to modifications of the HCP and maintain the original terms of the HCP to the maximum extent possible.

The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild

The Service finds that the taking to be authorized under the proposed permit will not appreciably reduce the likelihood of the survival and recovery of the beetle in the wild. The ESA's legislative history establishes the intent of Congress that this issuance criterion be identical to a finding of "no jeopardy" pursuant to section 7(a)(2) of the ESA and its implementing regulations (50 CFR 402.02). Consequently, the Service reviewed the HCP in accordance with ESA section 7 procedures and determined in its Biological Opinion, herein incorporated by reference, that the beetle would not be jeopardized by the issuance of the permit and implementation of the HCP. The Service further found that critical habitat would not be adversely modified because no critical habitat for the beetle is designated in the action area.

The majority of habitat loss (1,250 acres) will be temporary and restored to original habitat conditions. Beetles are expected to recolonize the restored habitat. The Biological Opinion calculates the temporary loss of habitat to be only 0.022 per cent of the occupied range in the Sandhills and the permanent loss of 33 acres of habitat representing only 0.00038–0.00059 per cent of beetle habitat in the Sandhills. All beetle habitat impacts will be fully offset with restoration of temporarily impacted habitat and protection and management of 600 acres of suitable beetle habitat in the Sandhills in perpetuity.

Based on the calculated density of 0.13 beetles per acre for the total of 1,283 acres to be permanently and temporarily impacted, the anticipated take is 167 beetles from death or injury related to R-Project activities. The population viability analysis by Amaral et al. (2005, p. 40) concluded that beetle populations of 1,000 or more individuals are viable long-term in the absence of severe catastrophic events or reduction in carrying capacity through a reduction in carcass availability, habitat loss, or fragmentation. Amaral et al. (2005, p. 38) indicates that populations of greater than 10,000 beetles can persist even through catastrophic events. Amaral et al. (2005) also estimated that the Sandhills beetle population to be about 10,000 beetles. NPPD estimated in section 5.3 of HCP that the Sandhills beetle population is about 55,743 (see also explanation in the section this Findings document on *HCP Specifies the Impacts from the Taking*).

In 2019, the Service released a Species Status Assessment Report that reviewed of beetle population status within the "Sand Hills" analysis area (Sandhills analysis area), which includes

the entire permit area (Service 2019, entire). Approximately 8,633,685 acres of potential beetle habitat occurs in the Sandhills analysis area, including favorable, conditional, and marginal land cover types (Service 2019, p. 63). The Service used the ratio of positive to negative beetle surveys to determine beetle relative abundance in population analysis areas (Service 2019, p. 71). The ratio of positive to negative beetle surveys in the Sandhills analysis area was defined as the highest condition category of "good," with the highest ratio of positive to negative surveys compared to other analysis areas (Service 2019, p. 95). Future land use changes are not expected to impact relative abundance of beetles in the Sandhills analysis area (Service 2019, p. 119).

Thus, the Service determined in its Biological Opinion that the take of 167 beetles within the R-Project permit area is a small fraction of the estimated local Sandhills population under either Sandhills population scenario and does not represent a catastrophic event or reduction in carrying capacity that would affect its long-term persistence. Thus, the loss of 167 beetles is an even smaller fraction of the rangewide beetle population. Therefore, the take that would be covered by the permit would not affect the species' long-term persistence within the Sandhills or its current range.

Based on the analyses and rationale in the Biological Opinion, the Service determined that the described change to the beetle's reproduction, abundance, or distribution from issuance of the permit is not likely to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild.

Other measures, required by the Director of the Service, have been met and the Service has received necessary assurances that the HCP will be implemented

The Service finds that the HCP, R-Project Restoration Management Plan, and R-Project Migratory Bird Conservation Plan incorporate all the elements we determined necessary for its approval and issuance of the permit. No other measures are necessary for the issuance of the permit under the HCP. The Service finds that the HCP, combined with the permit conditions, provide the necessary assurances the HCP will be implemented.

GENERAL CRITERIA AND DISQUALIFYING FACTORS – ANALYSIS AND FINDINGS

We have no evidence that NPPD's permit application should be denied on the basis of the criteria and conditions set forth in the regulations for General Permit Requirements (50 CFR 13.21 (b) –(c)). The applicant has met all the criteria for issuance of the permit and does not have any disqualifying factors that would prevent the permit from being issued under current regulations.

RECOMMENDATIONS ON PERMIT ISSUANCE

Based on the foregoing findings with respect to the proposed action, I recommend approval of the issuance of the permit to NPPD, in accordance with the HCP.

Noreen E Walsh

JUN 1 2 2019

Noreen Walsh
Regional Director, Region 6
U.S. Fish and Wildlife Service
Denver, CO

Date

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